

The ⁹⁻²⁻⁴⁹ *Citrus Industry*

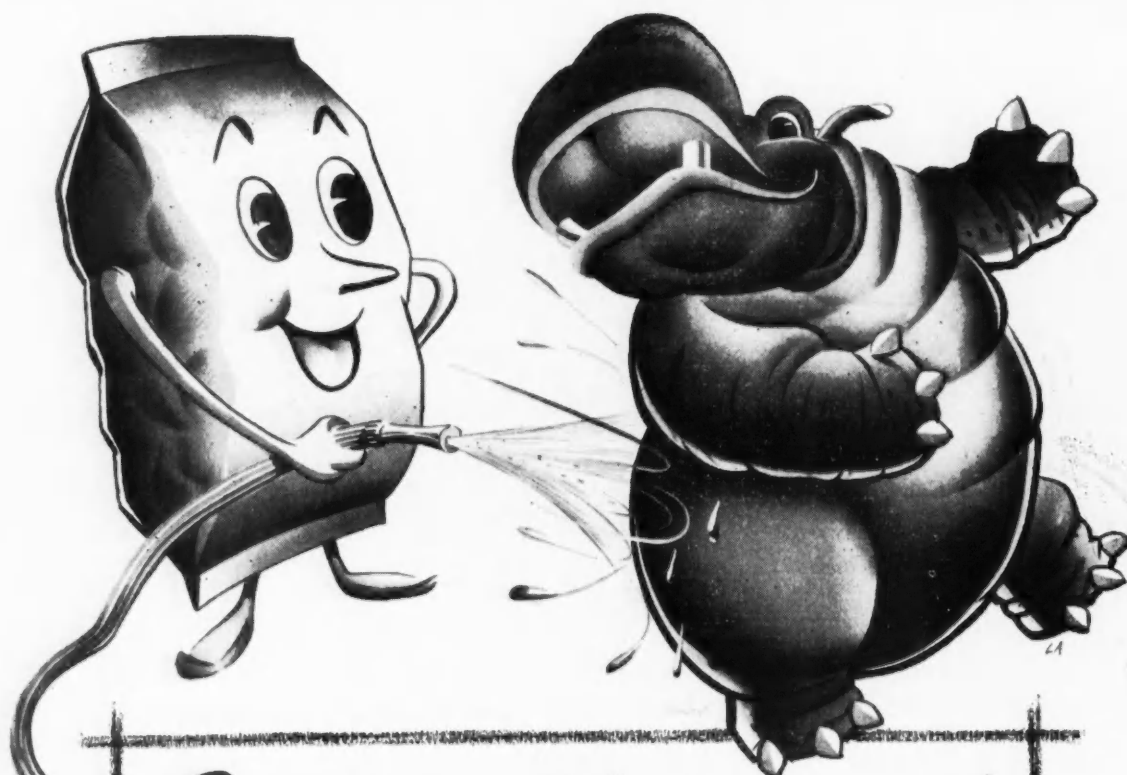
Getting Set For Next Season's Operations

Florida Citrus Mutual, super-cooperative of the Florida citrus industry, is now busily engaged mapping out plans for next season's effective operations.

Directors of Mutual have held numerous meetings and conferences in which they have sought and received the cooperation of many leaders in every branch of the industry. These meetings and conferences are still going on and plans are rapidly maturing for the handling of what promises to be a full capacity crop.

Volume control, pro-rate and other features of market control have been and still are being given serious consideration and a tentative program is expected to be ready for submission to Mutual members at a not too distant date.

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European-North African Citrus Study Resumed

J. Henry Burke, marketing specialist of the Office of Foreign Agricultural Relations, U. S. Department of Agriculture, has resumed a study of citrus marketing and production in Europe and North Africa after conferences in the United States with citrus industry and Department representatives.

The study, which began last winter, so far has covered the United Kingdom, France, Belgium, Norway, Denmark, Sweden, the Netherlands, French Morocco, Algeria and Tunisia. It is being projected to include Spain and Italy, and further observations will be made in the North African countries previously studied. The survey, which is being conducted under the Research and Marketing Act program, U. S. Department of Agriculture, is designed to aid United States citrus producers in re-establishing European markets for their products.

Mr. Burke has reported that although there is potential demand in Europe for from 25 to 30 percent more citrus and citrus products than before World War II there is little immediate possibility of improving the market there for United States citrus exports because of a dollar shortage in most European countries. The governments of countries participating in the European Recovery Program, he explains, prefer to use ECA dollars for purchase of other commodities. Shipments of citrus and citrus products presently are confined to Belgium and Switzerland.

European countries for the most part, the marketing specialist has stated, are obtaining citrus and citrus products mostly under compensation agreements calling for inter-country exchange of needed commodities. Denmark, for example, obtains citrus from Spain in exchange for fish, potatoes, and horses.

The United Kingdom is purchasing from the United States large quantities of orange juice concentrate for maintenance of its Child Health Program, but plans to develop other sources of supply to conserve dollars.

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Citrus Insect Outlook For June, 1949

The advent of June means that growers are faced with a dual problem of holding rust mites in check and at the same time planning and executing a satisfactory scale control program. This is the time of year and the kind of weather that is most favorable for increases in rust mite infestations. They have been noted to be so numerous in some groves that control measures are now necessary. In some cases the infestation is due to the fact that the melanose sulfur spray was applied in March and a considerable period of time has elapsed since that date. In those groves where only one application of sulfur has been made since the first of the year, it is to be expected that rust mites will be a problem either now or within a short time. Therefore, it behooves the grower to check his groves carefully for rust mites at the present time. Where as many as 15 percent of the fruits are found to be infested, use a sulfur spray or dust. This application should precede the oil spray by two to three weeks.

Scale Control

Scale control represents the main problem for the citrus grower at the present time. As has been emphasized in previous articles, both Florida red scales and purple scales have had one extra generation during the spring of 1949. On the basis of data collected from groves throughout most of the citrus area, it is anticipated that both species of scale will have another hatching period about June 1. This represents a hatch which would normally have taken place in most years in July or August. As a result, growers are faced with the probability that scale populations will be excessive in many groves during the course of the summer and fall months. Extreme care should be taken in applying oil sprays for scale control so that maximum benefits may be obtained. This means that a very thorough coverage must be obtained. The wood and both sides of the leaves must be wet

J. T. Griffith, Jr. and W. L. Thompson¹

Citrus Experiment Station,
Lake Alfred, Florida

regardless of the type of machine that is used to apply the spray. In the case of Speed Sprayers, growers are again cautioned to maintain tractor speeds of less than 1½ miles per hour, preferably in the neighborhood of one mile per hour. **Adequate gallonage must be used.** It will be much better to use a few too many gallons than not enough this year and even with extreme care, many groves may require an additional spray for scale control by fall.

In the paragraphs below, several of the factors concerned with the timing of oil sprays will be discussed. All should be considered in planning a scale control program. Some will be more important than others in particular groves and the individual grower will have to decide for himself which ones he should consider as paramount.

As noted above, crawler periods will be expected to occur during the first week in June. From the standpoint of obtaining maximum mortality it is suggested that sprays for scale control be applied sometime after the 10th of June and before July 15. This period should be optimum from the standpoint of killing a maximum number of scales of both species because it is anticipated that during this time a high percentage of both species of scales will be in a young stage of development. It is probable that better control will be obtained during the latter part of June than during the middle of July. Where possible, all of the sprays for scale control should be applied within this 30 day interval. However, for those growers whose acreage is so large that they cannot cover the entire acreage within 30 days, it may be necessary to start sprays early in June. Where this is done, it is suggested that those groves which have light infestations be sprayed first and that those with heavier

infestations be sprayed between June 15 and July 5.

Improperly timed oil sprays adversely affect the formation of soluble solids in fruit. They also have an adverse effect when the degreening of oranges or grapefruit is to be considered. This is particularly important with early oranges or early grapefruit. Therefore, it is suggested that Hamlins and Parson Browns be sprayed first; that early grapefruit be sprayed next; and that Pineapples, Valencias and late grapefruit follow in that order. In any case, any fruit which is expected to be shipped early should be sprayed not later than the 15th of July, but late June would be the preferred period.

Fruit size is an important factor to be considered this year. Many groves bloomed late in the spring and fruit will still be too small to spray with oil during the early part of June. Both oranges and grapefruit are susceptible to an injury known as oil blotch whenever oil is applied prior to the time that the fruit has reached 1¼ inches in diameter. In those groves where fruit remains less than this in size, oil sprays should be delayed.

The status of soil moisture is of course a very important factor to be considered in planning an oil spray program. Soil moisture must be adequate and in no case should trees be sprayed with oil where there is any tendency toward wilt. There is no way of anticipating when the rainy season will start, but oil sprays should be applied only in those groves that have been irrigated or those groves where soil moisture may be considered to be adequate.

In summary then, for maximum scale control apply sprays between June 10 and July 15 with June 15-July 5 the preferred period. Spray early maturing fruit first. Spray only where soil moisture is adequate. Thoroughly wet all wood and leaves.

Grasshoppers

It is to be expected that there may be some injury in a few groves in the Lakeland, Plant City, (Continued on page 11)

¹ Associate Entomologist and Entomologist, respectively.



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Mutual's Operations This Season And Next . . .

February 28, 1949, will long be remembered as a date of the greatest significance to the citrus industry and the general State economy. On that day, Mutual announced that, after over one year of intensive campaign efforts, nearly 80% of the citrus production was represented in the membership of Florida Citrus Mutual.

As one of the men charged with the responsibility for the drafting of the Mutual Plan and the conduct of the campaign for its acceptance by the industry, I want to take this opportunity not only to thank the thousands who helped but to give expression to my pride and satisfaction in this day of loose economic thinking that the men of Florida in the best traditions of America determined to save the State's most important industry through self discipline and the use of their business talents in setting up their own organization.

This is democracy at its best. This is worthy of the spirit of the men who have built Florida. This is not the weak turning to the Federal Government every time trouble threatens, but it is, instead, the self reliance which some day a resurgent American agriculture will substitute for much of the screwy political and economic philosophy that would make mendicants of the once proud and independent

Address at
**Fifth Annual Gulf Citrus Growers
Institute Brooksville, Florida**
Friday, April 29, 1949

By
Merton L. Corey

farmers of the nation. This is no trading of your birthright for a mess of pottage. This program is based upon your faith in the soundness of the Florida citrus industry and your confidence that Florida has the skill and character to build its own successful marketing program.

Thank you for letting me have a small part in the building of Mutual. It has strengthened my faith in the essential integrity of most men and the power of cooperative, democratic action.

In the limited time available, I can do but little more than touch the mountain peaks of this broad subject. First, what is Mutual? It is a cooperative structure which has the approval of Federal law under which the citrus growers, shippers and canners may develop a business program principally in the field of marketing by which they can assure themselves fair returns for their products. No other system is available or can be provided which will afford protection against the disorganized marketing

which was responsible for the citrus price disasters of the 1946-47 and the 1947-48 seasons. Its organization finally came about because every person at all familiar with the citrus industry and general market and economic conditions came to realize that without united action on the part of those who produce and handle Florida citrus, there could be only a repetition of disastrous years which would finally bring ruin to thousands of growers and handlers.

Let me list Mutual's purposes and powers:

1. To provide a medium for co-operative unity of effort by producers and handlers.
2. To provide economies and reduce waste.
3. To provide the facilities and agencies for orderly marketing.
4. To encourage better and more economic methods of production.
5. To promote better texture, grade and pack.
6. To engage in more effective methods of advertising Florida citrus fruit.
7. To adjust supplies to market requirements.
8. To enlarge the domestic and foreign markets.
9. To cultivate and develop a more thorough understanding of Mutual interests among producers.
10. To endeavor to secure more

equitable freight rates.

11. To carry on experimental operations and conduct research in production, processing and marketing.

12. To cooperate in securing appropriate State and Federal legislation affecting the industry.

13. To develop more complete information service for its members.

14. To adopt a "master brand" and to establish rules governing the regulation of same.

15. To cooperate with Federal and State agencies in securing more effective enforcement of laws affecting the industry.

It is obvious that the Charter powers are so broad as to include anything which the growers might conceivably wish to do to improve the production and marketing of citrus. If anything has been omitted, it was unintentional because there is complete legal authority for the industry to take over the management of its own business in every possible field through a united cooperative organization which has the legal blessing of the Federal Government and the example of its successful operation in many other areas over long periods of time.

Some of the functions above listed are now performed by other agencies. Many of these powers may not be exercised for many years to come, some perhaps never. That's another reason for liking the independent character of the Mutual Plan. There is complete freedom to establish policies adjusted to the needs of the day, the week, the season. There are, of course, some matters which, because of their nature, should be handled by government legislative and administrative bodies. Mutual will be the citrus voice of Florida because of the tonnage it represents and the character of the growers and their spokesmen. There are some problems in State and nation where government cooperation must be solicited to make effective some necessary controls upon the whole industry rather than to be limited to the Mutual members, giving outsiders unfair advantages over those who are seeking cooperatively to improve the industry. Personally I have complete confidence that the Florida citrus industry is capable of doing the job it has undertaken. Mutual will be as great and as successful as the combined intelligence and fairness of the individuals and areas out of which it is constituted.

Reflecting upon what has

happened in the past, some may be cynical about what men may do in the future. In this connection, I want to give testimony out of a pretty ripe experience, that, appraising the spirit and fairness of all the men who constituted the original Board headed by Latt Maxcy as president, the second Board of which Walton Rex was president, and the third Board with the present president Vernon Saurman, there has been manifested, without exception, such open fairness, generosity and concern for the public good as I have never seen excelled in my experience in any section of the nation or with any group of or representing the producers. Every man of them so far as Mutual is concerned is entitled to your thanks and your trust and confidence as we go forward to build a stronger Mutual. Don't be misled by the whisperings of men whose business and citrus philosophy is that the industry must go through disaster and they and other so-called strong hands take over.

What has Mutual done this season, and what will it do? Even before it was christened on February 28, Mutual performed a service, in cooperation with other agencies, which has brought Florida growers enough additional returns to pay the entire cost to date of those cooperating agencies and the operating expenses of Mutual for the next ten years. I refer to the voluntary orange allotment program.

When the California freeze occurred, growers and shippers correctly reasoned that this would be a bullish influence in the market. Prices advanced sharply in the auction to \$4.00 and the f. o. b. price to from \$2.75 to \$3.00. Operating under blind marketing practices without cooperation and with no controls, voluntary or compulsory, the markets were promptly flooded with resulting price declines in the auction to as low as \$2.25 and f. o. b. to \$2.00. Everybody knew that the statistical and competitive situation was such that with a spacing of the shipments, the higher price level could be maintained and increased. Fortunately for Florida, though Mutual was not yet qualified to operate, its members included a majority of the membership of organizations which had been fighting each other for years and which had never before been brought into a common program and apparently could not be united in this crisis and opportunity.

Mutual had been quietly studying

marketing problems in conferences with representative shipper groups even prior to the California and Texas freezes. This was done because of the long delays in the completion of the sign-up and the wish to get ready to undertake effective operation the moment the sign-up was completed. Here, then, because of what Nature was doing to California and Texas, was an opportunity. Mutual had no machinery but it did have officials and directors of ability and imagination and, what, at that time was most important, it had great influence with all segments of the citrus industry, offering a leadership which could bring them together. Mutual called conferences, awakened a spirit of cooperation among all factions, and, happily for Florida, met with a generous and reasonable response beyond the expectations of those who, because of the failings of the past, had come to believe that the industry could never be united. A simple weekly allotment program for oranges was devised. The Florida Citrus Commission was chosen as the voluntary administrative agency. With the help of the Growers Administrative Committee and an able committee of growers and shippers, the market was stabilized to the extent that, in the judgment of industry leaders, the already-increased returns because of this program amount to more than ten million dollars. What a fine example of the power of orderly marketing and of the constructive influence of men who are fair enough and understanding enough to know there is greater profit for all through cooperative effort, the giving up of a little for the benefit of the industry as a whole!

If Mutual can continue to have the backing of that sort of spirit and fairness, the profits of this season will be multiplied many times over in succeeding seasons even though the problems may become increasingly difficult. Surely, the need for unity will be even greater, for Providence will not continue to frown upon competitive areas to the benefit of Florida. Florida must work out its own destiny.

What else is Mutual doing this season? Again we can all be grateful that in its youth and inexperience, it is not called upon to grapple with many serious problems which confronted the industry when Mutual was chartered and which will test its strength to the utmost in the seasons which lie ahead. We are given a breathing

spell for careful study of production, marketing, practical and economic conditions, present and prospective. This time is being utilized to carefully develop a basically sound program qualified to tackle the toughest jobs. At the heart of this problem is the maintenance of the present fair spirit of unity. It is the earnest hope of all of us that, when the next season opens, we shall not only have a sound program from every economic standpoint but that we may be assured of its complete effectiveness because of the high percentage of the control of the production. With 85% to 90% of the fruit in Florida Citrus Mutual—and that's the goal we are striving to reach—difficult fresh fruit and canning problems become relatively simple because such volume control assures not only sound marketing practices but the complete cooperation of enough shippers and handlers so that selfish outside interests, wanting a free ride but not helping their neighbors to pay the cost, or the relatively few who unwisely believe that they can profit most through the losses and failures of their neighbors and competitors will not wreck the industry. Thank God there are only a very few who will choose to imperil the entire State economy by willfully seeking to destroy Mutual which offers the only hope for the future.

I like Florida Citrus Mutual because of its elasticity, its power to move into situations and areas quickly and effectively as the problems occur. I have already commented upon the satisfaction we all have in acting for ourselves instead of trading our independence for government doles. That's a matter of the spirit, but from the practical standpoint as well, the growers only can set up the complete machinery for effective marketing. They must be prepared for any conditions. If there is much of the machinery which may never be used, it will be worth infinitely more than it costs because of the market influence of preparedness.

I recall, as a young man in my native Nebraska, how I was thrilled by the matchless oratory of William Jennings Bryan when he argued that military preparedness was not necessary but that we could rely upon our people springing to arms by the millions when national safety was threatened. We have learned in two world wars the fall-

acy of this position. Even now, we are in constant peril from Communism because our provincial civilian spirit demobilized our European forces entirely too soon.

But, we'll let the statesman and diplomats wrestle with the international problem. The reorganization of the Florida citrus industry poses in this small but important area a sufficiently-tough domestic problem that it deserves all of your attention and mine during the next few weeks.

Making war and conducting the business of agriculture successfully have changed materially in my life time. Wars aren't to be won by untrained patriots nor agriculture's problems solved by horse and buggy days' practices. As in war so in the development of a sound marketing program for Florida, we must be fully informed upon things as they are, reasonably forecast what they are likely to be and prepare the machinery to master these situations as they arise. We need more telescopes to view and appraise the future and fewer microscopes to examine the tiniest faults of our associates in the citrus industry.

To that end, we have had almost daily conferences with statisticians, economists, growers, fresh fruit shippers, canners, lawyers, bankers and businessmen. We are seeking to re-examine our set-up and make whatever adaptations may be necessary to best serve all interests—growers, shippers, canners and consumers. You will be gratified to know that few, if any, changes in the basic plans are necessary. This is the judgment of our legal, economic and business advisors supported by those who are thoroughly acquainted with Florida conditions and Mutual plans and objectives.

Mutual is broad enough legally and powerful enough practically to undertake successfully any program within its Charter powers which can be reasonably anticipated in the near future.

I repeat that Mutual's success is assured if the growers, shippers and canners will continue their present fair and cooperative attitude. I cannot, without violating the time limitation upon this talk, give you even a sketchy summary of all the matters which are being discussed with the view of reaching next season with a sound marketing program. Just as an example of what is going on, let me tell you briefly of two conferences which were held on Wednesday of this week.

We devoted the morning to a con-

sideration of auction practices and problems and the afternoon to the f. o. b. markets. Participating in these discussions were men thoroughly acquainted with Florida and market conditions, men with years of experience in the special types of operations. They did not agree on everything. They did agree that the only assurance that Florida can be saved from the disasters of the past two seasons is in the sound organization and operation of Florida Citrus Mutual. They recognized that the major things upon which they do agree and especially this broad objective of Mutual is more important than their differences on lesser matters. They were, therefore, constructive and helpful just as we confidently expect that other groups in other sections of the State will not take uncompromising positions which would block their cooperation in the major overall objectives.

You will be interested in their conclusions at the end of a long day of discussion. I summarize these conclusions as follows:

1. Auction Allotment.

Despite the comparatively small percentage of Florida citrus sold through the auctions, it was agreed that the correction of the auction situation is vital because of its influence as a barometer in all markets, auction and f. o. b. They have in mind, therefore, that some allotment program based upon a correct understanding of conditions here and in the markets should be worked out with the help of trade representatives in such auctions, giving natural and proper consideration in such allotment program to the historic performance of Florida areas and interests.

2. Minimum f. o. b. prices.

It was expected last January that Mutual would fix minimum prices for this season. It did not become necessary to do so at anytime after the Mutual organization was completed February 28. It probably will be desirable to do so during the next season. If not for the whole season, then for a part of it. A sound plan, operated by an informed and competent management, can and will use this power to the greatest advantage of the industry, revising such prices from week to week, skillfully and fairly.

3. Weekly Allocation of Shipments.

Here again the use of such machinery and the time when it will be put into operation must be

(Continued on page 9)

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NEW CITRUS LAWS ENACTED

Florida citrus growers, packers, shippers, cannerys and processors are now operating under an entirely new set of laws and regulations, under the so-called "Warren" bill recently passed by the Florida legislature. Although slightly modified from the original text, the bill is essentially the one proposed by the Governor's advisory committee. Except for an amendment continuing the present members of the Florida Citrus Commission in office until the expiration of the terms for which they were appointed; a slight modification of the arbitrary dates for the maturity tests, and a less stringent application of grade labeling for cannery products, the bill is practically what the Governor demanded and what he promised in his pre-election campaign.

The bill as enacted had the approval and hearty support of some elements of the industry, while being disapproved and bitterly fought by other elements. There was honest difference of opinion on some features of the measure as was to be expected. That it contains some good features even the opponents of the bill as a whole are free to admit; the practicality of some other features are open to question — at least they are being questioned by a not unimportant element within the industry.

But — "the proof of the pudding is in the eating thereof." If, in actual operation, the new laws prove beneficial to the entire industry, well and good. If they fail to measure up to the expectations of the Governor and the bill's supporters, that will be just too bad and will call for remedial measures at the first opportunity. The thing which all elements within the industry must realize is that they are now working under an entirely new set-up; that, whether they like it or not, that set-up must be given a fair and impartial trial until time shall have demonstrated the beneficial or detrimental effects upon the industry. The bitterness and factional strife which was engendered during the long controversy over the bill should be forgotten. There has been entirely too much of that in times past. Now is a good time to practice a little industry harmony — at least until the "pudding" has demonstrated its efficacy, or inefficacy.

BE NOT DECEIVED

Present high prices for Florida citrus fruit, right now at an all-time high, should not blind

growers, shippers and processors to the need for alertness and harmonious action in meeting the problems which are certain to face them in the future.

For the growers, that means the production of the highest possible quality of fruit; for the shippers, it means control of volume and distribution; for the processor, it means high grade products and controlled distribution.

Only the grower, through his own intelligent efforts and the aid of nature, can control the quality of his fruit. The shipper and the processor can achieve control of volume and distribution only through some over-all organization with the authority to set grades, to adjust supplies and enforce orderly marketing.

Such an organization Florida now has in Florida Citrus Mutual with control of more than eighty percent of the citrus tonnage of the state. As set up, this organization provides the vehicle through which growers, handlers and processors can advance the interests of every element, every faction and every section of the industry. To the extent that Mutual has the support of these varied elements, but primarily of the growers, will its efficiency depend.

Mutual's constitution covers a field wide enough and broad enough to embrace all the activities of the industry, from the owner of a grove to the shipper of a finished product from a cannery or concentration plant. It is the realization of a dream which many cooperative-minded growers have long entertained, but which never before has approached realization. It is the one thing, more than any other, which can assure the future of the industry in Florida — the prosperity of the grower and the enduring stability of a great industry.

Mutual deserves and should have the confidence and support of every element of the industry — a confidence and support which we believe will be forthcoming.

GROVES BADLY IN NEED OF MOISTURE

As this is written, on the last days of May, reports of field men in every section of the Florida citrus belt indicate that groves are suffering badly from need of moisture. Light rains late in April and during the first days of May gave relief in some sections, but since then the continued drought has given rise to apprehension. Wherever possible artificial irrigation has been brought into service. In some sections where irrigation was not possible, some trees have been defoliated and bloom has been delayed. Where local showers have helped and where irrigation has been practiced, a fine set of very promising fruit is reported.

Encouraged by present high prices and the prospect of continued favorable market conditions, growers have been giving their groves the best of care along all cultural lines. Neglected groves have been pruned, heavily fertilized and sprayed for protection against insects and other citrus pests. Growers seem determined that nothing shall be left undone to insure the production of a crop of the highest quality. The prospect from this angle seems to be most favorable.

MUTUAL'S OPERATIONS THIS SEASON AND NEXT . . . (Continued from page 7)

determined by the conditions as they exist from time to time. I think the advisors with whom we conferred Wednesday do not have this in mind for the beginning of the season but would await the movement of such volume as makes necessary the assurance of an orderly movement.

Recognizing that probably 60% of the Florida production next year will go into cans, we are devoting a great deal of attention to the study of this problem. The helpful power of Mutual in this field should be apparent to everyone. With Mutual controlling 80% of the fruit and with a careful study of production conditions and marketing demands, Mutual will be in a position to fix realistic on-the-tree prices which the processors will be required to pay.

I am glad to be able to report that we are getting encouraging cooperation from the canners in developing a practical plan under which this price structure can be instituted and maintained in fairness to all—the grower, the processor, and the consumer.

You can think of many problems I have not touched. They will be studied and plans will be formulated to handle them. Perfect answers will not always be found. Mistakes will be made. But, all problems will be tackled with skill, courage and imagination by officials and directors selected by you, men who are as fair and as determined as you are that Mutual shall operate with success and fairness to all.

In conclusion, I want to re-emphasize that the broad policies will be outlined and planned as fast as possible, but, always having in mind the keeping of the program sufficiently elastic so that operating details may be readjusted to meet the changing conditions in production and markets.

Mutual is the supreme test of the industry in self discipline, in its capacity for self-government and in the workableness of democracy. Based upon my experience among you, I am confident that you will prove that democracy can work in Florida and that, building upon the intelligence, skill and tolerance I find in every branch of the citrus industry, the essential unity which has been achieved will be maintained.

In behalf of the Mutual Board,

I want to thank you for your past help and the assurance of your cooperation in the future.

FARMERS OF ESCAMBIA TAKE CUE FROM CLUB BOYS, PLANT INDIGO

Escambia County farmers have planted more than 600 acres to hairy indigo this season, according to County Agent E. N. Stephens.

The success of several 4-H club boys who planted demonstration plots of hairy indigo last year was largely

responsible for the farmers' plantings this year, Mr. Stephens said. More acreage will be planted in corn at "lay-by" time.

The County Agent also reported that 16 farmers recently planted 50,000 certified sweet potato "draws" which they obtained from a grower in Holmes County.

Spuds Johnson says work is the yeast that makes dough.

The activities of home demonstration club members for health improvement are indeed encouraging.



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Disposal of Citrus Cannery Wastes . . .

There is no use denying the fact that the citrus industry does contribute to the pollution of the waters of central Florida. The great bulk of this pollution comes from the 67 canning plants and some 18 citrus feed mills in the state. However, there is a universal awareness among the leaders of the industry that here is a problem to be solved. They have lent their support in this direction through research conducted by the Florida Citrus Commission which will be mentioned later.

In the early days of the canning industry the peel, rag and seeds were not utilized and they constituted the biggest problem of waste disposal. When it was found that this material when dried became a desirable cattle feed a great step forward was made. In commercial drying of the peel, it is first ground, a small amount of lime added and then as much water is pressed out as possible. The press liquor from this operation contains, on the average, about 10 per cent total solids, two-thirds of which are sugar. When dumped into surface waters, this material causes serious pollution because of its high content of putrescible material. Fortunately, nearly all of the press liquor produced these days is evaporated to citrus molasses. While the manufacture of citrus molasses was profitable during the war years, competition from black strap molasses since the war has changed the picture considerably. However, it can be stated that the methods of treating the solid refuse from the canning plants are well known and are in large scale use at present. The question of whether these operations are profitable or whether the canning plants must absorb their losses as a necessary operating expense depends only on the prevailing economic factors.

The situation in regard to waste water from canning plants is much different. This water which is contaminated with drippings from processing machinery and from periodic wash-downs is too dilute to evaporate to molasses and yet is too concentrated to be treated by con-

Robert R. McNary

Research Fellow

Florida Citrus Commission,
at Public Health Conference

ventional sewage treatment methods. When we consider (in very round numbers) that 50 gal. of water is used for every one of the 50,000,000 cases of canned citrus processed per year, then the industry releases about 2,500,000,000 gal. of contaminated water per year. Of course 90 per cent or more of this water is used for cooling the cans after pasteurization and, as long as it is not mixed with other contaminated water, is readily disposed of with no treatment required. The rest of the water must usually be treated if nuisances are to be avoided. The amount of treatment of course varies widely depending upon local conditions.

Where no treatment is given the waste water it is allowed to run into the nearest ditch, lake, stream, salt-water bay or city sewer. Drainage wells have been used in the past but are prohibited at the present time. The location of the plant, the size of the continuity of its operations, the concentration of its wastes and the size and condition of the receiving body of water are all factors which influence the effect of cannery effluent as far as nuisances are concerned.

Lagooning of waste water is practiced at several locations in the state with varying success. Where the conditions are favorable and the lagoons are rotated and given sufficient attention the odors are not too pronounced, but lagoons should not be placed close to human habitation. Seepage from lagoons that have been in use for several years may reappear at a lower elevation and create a nuisance from bad odors. Filtration of the waste through natural sand beds is also practiced at several locations in the state with varying success depending upon the conditions of the sand and the manner of dosing.

One small canning plant runs its

waste water containing the organic matter into a septic tank which overflows into a system of drainage tile laid just under the ground surface. During the comparatively short time this has been in operation it has worked satisfactorily as long as the sludge is removed from the tank every week or two.

A few years ago, one canning plant used a series of five tanks which were periodically inoculated with yeast. The effluent from the last tank is run into a salt-water bay in such a manner that rapid dilution occurs. Since this plant has not operated much in the last two years, the writer has not had the opportunity to study its effectiveness.

In 1941, von Loesecke and his co-workers published the results of their investigation of the use of biological filters in treating citrus wastes. They found that the cost of the filters would be exorbitant. The investment in the filters might even exceed the investment in the canning plant itself.

Since all present methods of treating cannery wastes have disadvantages and limitations which preclude wide application, the Florida Citrus Commission has sponsored research with the hope of developing improved methods. It seemed to us that anaerobic or methane fermentation might be the solution. In addition to reducing drastically the polluting capabilities of the waste water, a by-product gas is formed which can be used as a fuel. The process is in the pilot plant stage at the present time. Within the next six to twelve months we expect to have adequate operating data on this pilot plant. We will then be able to estimate the cost of installing and operating a full-scale plant and to determine the value of the by-product gas. It is not expected that the value of the gas will balance the operating and investment charges except in a very large installation. Depending upon the local conditions the effluent from such a treatment plant may require additional treatment of another type, but this will be determined at the proper time. At

any rate, we have great hopes that anaerobic or methane fermentation of citrus waste water will go far in eliminating pollution from this source.

**CITRUS INSECT OUTLOOK
FOR JUNE, 1949**
(Continued from page 4)

Bartow, Bowling Green sections due to the feeding of young grasshoppers in June. Checks in late May showed that grasshoppers were still hatching. Apparently most of the hatch started around the first of May, but it has continued throughout that month. In general, grasshopper infestations are much lighter than they have been for the past two years. It is anticipated that most infestations will not be severe, but some individual groves will have too many grasshoppers. This will be particularly true in groves which have not been clean cultivated throughout the spring of the year. Apparently the hatch has been delayed due to excessive dry weather and many growers have the feeling that there will be no grasshoppers this summer. Since young hoppers are present in some places, it is suggested that in those groves where grasshoppers have been a problem during the past two years, that the individual growers make a careful check now in order to be sure that they do not have an infestation which they have overlooked. Insecticides may be applied for the control of grasshoppers at this time. Where infestations are found in grassland margins adjacent to groves, control measures should be taken. Many grasshoppers can be killed there at an extremely low cost. Reference to the table published in the May *Citrus Industry* will give satisfactory dosages for the use of both chlordane and toxaphene.

For any additional information contact the Citrus Experiment Station.

**FARM LAND VALUES
BECOME STABILIZED**

Florida farm land values have remained stable the last few months at 58 per cent above pre-war prices, according to F. W. Parvin, associate economist with the Agricultural Extension Service at the University of Florida.

"The downturn in the average value per acre of Florida farm land occurred in 1947, said Parvin, "some two years before farm land values in other

sections of the country started decreasing."

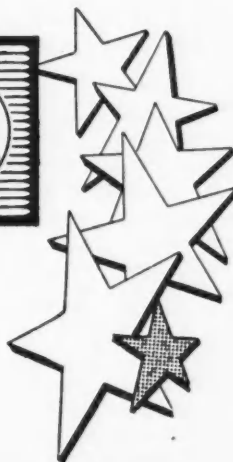
This was the first lowering of values in 10 years and not until the period of November 1948 to March 1949 did other sections of the country notice

the trend.

"By March 1, 1949, only 22 states still found themselves in the 'increase' column," said Parvin, and most of these were in the Southeast and Midwest."

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Californians Study Cause For Small Orange Size

(Concluded From Last Issue)

Lessening the Harmful Effects of Insects and Insecticides

With this as a background we began over fifteen years ago to greatly expand our research work with the twofold objective (1) to increase the effectiveness and practicability of HCN fumigation and hence reduce the need for oil sprays, and (2) to lessen the damage from the use of oil sprays. Since about 1940 this has evolved into a research to eliminate the use of oil sprays by finding suitable substitutes among the thousands of new chemical compounds being produced by the chemical industry.

We have screened literally thousands of these compounds in the laboratories and hundreds of them in the field in our attempt to avoid the use of oil, which has become the most widely used insecticide on citrus trees today in this state. While there are plenty of convincing quantitative data showing the adverse effect of oil sprays on the quality of oranges, there are only the most general intangible impressions on the effect of oil sprays on orange trees themselves. These impressions, or general observations, reveal that these effects are almost uniformly adverse to the health of the tree and vary from striking losses of foliage and fruit to an apparent increase of dead twigs in the trees.

We might review the trend in insect control on oranges during the short period while most of the members of the present Exchange Board have been interested in orange production.

The major pests of citrus have become increasingly more difficult to control. In the "early days" one fumigation treatment commonly afforded excellent control of scale insects for two or three years. Now it frequently happens that a fumigation or an oil spray treatment will not even provide satisfactory control of the red scale over a period of one year.

Formerly the citrus red mite was only a minor pest or not a pest at all in many localities. Even in the

L. D. BATCHELOR
IN CALIFORNIA CITROGRAPH

The following is a report of research work on this problem now being carried on at the University of California Citrus Experiment Station.

orange-producing sections where red spider was of most importance then, one oil spray treatment in the summer-early fall season afforded excellent control for the ensuing year. Now the red spider is a serious pest in all principal orange-growing sections south of the Tehachapi range. And also, no single treatment with any material including oil spray will generally afford control of this mite for much more than a six-to-eight-month period and often the period is much shorter. Hence the orange orchards in general are supporting higher populations of scale insects and mites than formerly, and likewise they are being treated with insecticides more frequently. It seems probable that these conditions may have a bearing on the sizes of fruit produced.

Consider this statement with the one that oil sprays are now the most widely used insecticides on citrus in California. In seeking new, safer, and equally or even more effective insecticides as those now in use, it is the considered judgment of the entomologists on our staff that about 75 per cent of their work may very probably have an indirect bearing on the small size problem of oranges.

In consideration of the devitalization of orange trees by aphid and red spider as this may possibly affect orange sizes, experiments were started early in 1947 to determine the facts. Two orchards are in this experiment in Orange County and one in Los Angeles County. Aphid and spider have been controlled the present year on replicated plots in these orchards regardless of costs purely to study the relation of infestations of these pests to orange sizes. This has been an especially bad year for aphid in two out of three of these orchards.

For good aphid control in one orchard the trees have been sprayed five times, in another three times, while the third has needed to be treated only once.

It seems safe to assume that any of the various factors which continually impair the metabolism of the citrus tree as a manufacturing unit would have an adverse effect on the normal fruiting characteristics of the tree.

Use of Plant Growth Regulators

Among the materials which have been added to oil sprays to lessen their harmful effect has been 2,4-D. This so-called "plant growth regulator" is a very powerful material. It has been used widely in moderate concentrations with oil, water, or other materials as a herbicide to kill harmful plants. It has been found, however, to have beneficial effects on some plants if used in very minute amounts. When added to oil spray mixtures at the rate of 4 parts per million, the beneficial effects of lessening leaf-drop and fruit-drop have been quite consistent. There has been no reduction in quantity or quality of the crop by the addition of this material in such amounts.

Sprays composed of water and 2,4-D have also been experimented with since the spring of 1946 as a means of preventing preharvest drop of both navel and Valencia oranges. The reports of the marked effect in reducing preharvest drop have been published. A profitable by-product of these experiments has been the determination of the effect of 2,4-D on fruit sizes. It appears that the sprays in August and September, when oil sprays are usually applied, or water sprays as late as January, will not affect sizes. However, the water sprays applied just prior to, or during the bloom period (March 1st to May 15th), to as late as July, have made a notable increase in the size of the fruit.

This effect is usually associated with a reduction in the number of fruit per tree. If too much 2,4-D is used (75 p. p. m. or more), the reduction in the number of fruits is excessive, and there is still a

greater increase in size but a lowering of external and internal characteristics of the fruit to the point of making them culls. The roughness and thickness of the peel and increased amount of "rag" are the main adverse characters of the excessively large fruit, whereas the crop may be cut to $\frac{1}{4}$ in number of oranges compared to the unsprayed trees.

Two of the experiments carried out on trees sprayed in late February, 1947, with approximately 20 p. p. m. 2,4-D showed a residual effect by decreasing the number of fruits; but by notably increasing the size of navel oranges picked in the late spring of 1948 the net reduction in boxes per tree was only relatively small (0.3 box on 3-box trees). Valencias sprayed (with 1 $\frac{2}{3}$ light-medium oil plus 8 p. p. m. 2,4-D) in June, 1946, showed increases in sizes when harvested in September 1947.

The entire effect of 2,4-D on the orange tree is not fully understood. Among things which are obvious are a reduction in foliage loss and reduced preharvest fruit drop, less fruit stem die back, and a reduction in the number of fruit per tree when an application of 20 p. p. m. or more is made during the flowering season. In most cases there has been a notable increase in the size of the fruit if a sufficiently strong spray was applied prior to, during, or just after bloom.

Much additional work needs to be done on this encouraging approach to the size problem before general recommendations can be made. From May to July this year we have enlarged this work by adding eleven more experimental plots totaling about 55 acres. This work has gone about as rapidly during the last two years as we could justify the trial of this powerful material in cooperator's orchards. From now on we can go forward with a lot more confidence that our experiments are not going to injure the trees.

Much still needs to be learned, however, as to the concentration of 2,4-D desirable to use to increase the size of the fruit without reducing the volume and quality to a very low point. We hope to have a preliminary report on our 1948 experiments to enable interested growers to carry out trials in a limited commercial way about the season of orange blooming next year.

Nutritional and Micro-Biological Studies

There are two other approaches to this problem which we are following up and which may be of practical value to orchards now in existence. One has to do with the general problem of orchard fertilizations, including nutrient materials which are applied to the soil, nutritional sprays, and agricultural minerals which are applied to change the reaction or acidity of the soil. It was shown several years ago that zinc deficiency is associated with small fruit. Most of the field ex-

periments are in cooperation with orange growers. They are located in Riverside, Los Angeles, Ventura, San Diego, and Orange counties. Yield records, fruit size measurement, and, in some cases, packing house grading records are being kept for these experiments. Soil and plant analyses are also being made to determine whether the trees are taking up the nutritional materials added. These experiments have been going on for the past four or five years in some cases and twenty years in one case. There are no very clear-cut and

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practical effects on fruit size at present.

In a long-term field experiment at Riverside, now in its 21st year, we have noted in recent years a slight increase in fruit size of navel oranges associated with the use of bulky organic matter. No effect was measurable during the first twelve years, however. The organic matter has clearly affected the structure of the soil and also increased the intake of irrigation water and rainfall.

Extensive experiments are being carried on in Riverside and Ventura counties studying the effect of soil fumigation on soil organisms, the growth of trees replanted on such soil, and a search is being made for soil fumigants which can be used in orchards without harmful effects on the trees.

The symptoms of poor feeder root systems under trees producing small size fruit has been rather generally observed by many people. Are these devitalized and decaying root systems a cause or an effect? These conditions could conceivably result from a persistent injury to the foliage thus influencing the normal amount of nutrient materials flowing back to the root system. A study is being made, however, of the pathological features concerned with this problem.

Several of the common soil microorganisms are persistently found on orange tree roots, especially in old orchards. We are trying to find out how significant to small size fruit the presence of such fungi as *Phytophthora* spp., and *Fusarium* spp. may be. The presence of nematodes on the roots of both decadent and healthy trees has been generally observed wherever citrus is grown in various parts of the world. There are also usually several other microorganisms closely associated with the nematodes. We enlarged our studies of this complex association during the past three years in relation to the slow decline of citrus trees which has gone hand-in-hand with small sizes. This study is also important to the problem of replanting land again to citrus, and was implied in comments concerning soil fumigation.

Survey of Outstanding Orchards

A survey of the orchards in the various districts is being made to locate especially outstanding orchards which have consistently produced satisfactory sizes. This is to be followed by a thorough study of the chemical, physical, and biological characteristics of the soil,

as well as the cultural and pest control practices. It is hoped that out of this will develop a series of chemical, physical and biological criteria, or measurements by which to evaluate orchard soils where small sizes and other problems are pressing.

The approaches to this problem which have just been discussed have to do with a possible remedy to the situation existing in the present day orchards. Additional work is well underway studying the effect of root-stocks and varietal bud selections on fruit sizes. A comprehensive plant breeding project is also under way to produce new varieties and also to rejuvenate old varieties by means of nucellar seedlings. A study of the relationship of climatic factors to fruit size is a side to the problem which has been considered but only in a preliminary way as equipment and help are not adequate to start this work at present.

In conclusion I wish to assure the public that work on this problem will continue to be the number one concern of the research staff of the Citrus Experiment Station. We cannot believe it will be any easy problem to solve, and we are con-

vinced it is a complex and difficult problem associated with the advanced age of many of the orchards most seriously affected.

TWO BOYS' 4-H CLUBS ARE MERGED IN LAKE

The Groveland and Mascotte 4-H clubs in Lake County have been combined recently into one club under the leadership of Bob Johnson.

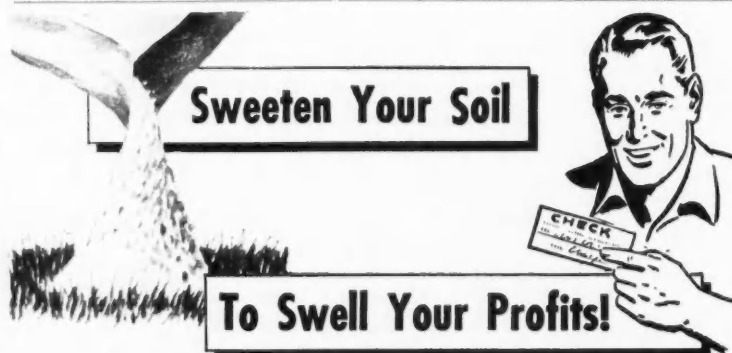
Floyd Eubanks, assistant county agent, working with the club, says the boys will hold nightly meetings on the second and fourth Tuesdays.

Officers of the newly formed club are Arvil Johnson, president; Johnnie Watkins, vice president; Reggie Kruffiss, secretary; J. D. Rhoden, treasurer; and David Gaffney, reporter.

BIG 4-H RALLY

Four hundred Volusia County 4-H club boys and girls and 50 parents and local leaders attended the recent 4-H rally day at DeLeon Springs, according to Assistant County Agent T. R. Townsend.

Over 4,000,000 acres are planted to peanuts yearly in the United States.



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New Frozen Citrus Purees

Make Fine Desserts Products

Frozen orange and lemon juice purees, made by a new process developed through research in the U. S. Department of Agriculture's Bureau of Agricultural and Industrial Chemistry, are now being sold to bakeries, ice-cream manufacturers, and other food concerns from Los Angeles to New York City.

These products, say Bureau researchers, give natural lemon or orange flavor and extra smoothness to such desserts as sherbets, ices, and pies. They also offer citrus growers a promising new market for their fruit.

The new purees were developed under the direction of Dr. E. A. Beavens, in charge of the Bureau's Research Laboratory at Pasadena, Calif. Work on them began about two years ago at the laboratory, then maintained by the Bureau in Los Angeles. A commercial firm soon became interested, and last year this company packed a million pounds of citrus purees for bakers and the ice-cream industry. In the summer of 1948, one large dairy sold 750,000 pounds of sherbet made from the frozen orange puree.

Of particular significance to citrus growers is the possibility that purees may be produced successfully from navel oranges. This type fruit, which constitutes more than one-third of California orange production, has previously not been suitable for processing because of the tendency for the fruit or juice to turn bitter. Preliminary tests by the Bureau indicate, however, that the new pureeing process will overcome this difficulty and may enable a satisfactory product to be made from navel oranges.

Large-scale production of frozen citrus purees, so far confined to California, is virtually just beginning, Bureau scientists believe. They anticipate that the process will soon expand to other citrus-producing areas, particularly in Florida. Chain stores and other distributors of food products have indicated special interest in the superior orange and lemon sherbets that can be made from the new purees.

When properly prepared and stored at low temperature (minus

10 to zero degrees Fahrenheit) these purees keep the flavor and nutritive value of fresh oranges or lemons remarkably well for a year or longer. Besides their value in a variety of desserts—cakes, pies, ice-creams, sherbets—they also make flavorful jams, marmalades, and beverages.

Citrus purees, like those from other fruits, differ from fruit juices in that they contain more of the fruit pulp. They give added body and smoothness, as well as superior flavor, to prepared food products. Purees of fruits other than citrus have been produced in increasing quantities for the past 18 years or so. Manufacture of frozen purees from orange and lemons, however, was not undertaken on a substantial commercial scale until 1948, because of the prevailing opinion that they would develop off-flavors in storage as a result of their high content of citrus-peel oil.

By applying special methods of processing, some adapted from methods that had previously succeeded with other fruits, Bureau scientists were able to overcome the peel-oil problem and other diffi-

culties. A few experimental packs of orange and lemon puree were put up by the Los Angeles laboratory during the 1947 season. After a year's storage at zero degrees

(Continued on page 18)

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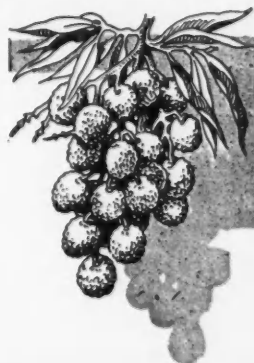
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Reports Of Our Field Men . . .

POLK COUNTY

J. M. (Jim) Sample

As of the middle of May much of Polk County is badly in need of rain. Irrigation is being done wherever possible, but the trees generally have not reached the critical stage. The summer application of fertilizer is going in adequate amounts and most growers are planning a sound production program due to the better prices in prospect for next year's crop. Oil spraying is going to be a problem because of the different sets of fruit on many groves. This will be particularly true in the case of early varieties where solids will be affected by late spraying. The sets of fruit for next year seems to be good with the exception of some grapefruit and tangerine groves that appear spotted and light. Pruning that has been neglected for the past two years will be done this summer. There still remains quite a volume of valencia oranges to be moved but they are being shipped at a rapid rate and most packing houses will be closed by the first of June.

WEST CENTRAL FLORIDA

E. A. (Mac) McCartney

The citrus season is just about over and growers are feeling a great deal better at this closing than they have for the past two years. We have been getting real money for our late varieties of fruit and we all feel that next year we will also have satisfactory prices prevailing. This all means that the average grower is doing all possible to get his grove property in tip top shape. He is using ample amounts of the proper kind of fertilizer, he is doing thorough cultivation, and spraying at the right time to keep insects and diseases under control. With a program like this being followed it certainly follows that we are going to have plenty of fruit for fall and spring shipments that will be of the best quality and should command the best prices. Vegetable growers have also had a successful season and have just completed their operations until started again for the fall season.

SOUTH POLK, HIGHLANDS AND HARDEE COUNTIES

R. L. (Bob) Padgett

The growers in this territory are very thankful for the recent rains. With the exception of some small areas we have received sufficient moisture to halt irrigation and set what I believe to be a normal to heavy crop of fruit. There has been considerable red spider activity in all parts of this territory for the past couple of months with some damage. Scale insects are very active and many growers are anxious to get under way with their oil spray, but due to blooming conditions and dry weather this spray program has been upset. However, it is essential that most groves in the territory receive this oil spray. The tomato crop is short in Hardee County, and with low prices the deal could not be called very successful. The cucumber crop was very good and sold at good prices. Growers are very optimistic about next year's citrus prices and are doing everything possible in a cultural way to have real quality fruit.

HILLSBOROUGH & PINELLAS COUNTIES

C. S. (Charlie) Little

The summer application of fertilizer is now being applied and the main thought in the mind of the grower is to the proper mixture in ample amounts with sufficient of the secondary plant food to insure the development of real quality fruit for the coming season. With the season closing during the next few weeks at very good prices, most growers are hopeful, and even optimistic, that the next season should open with good prices being paid for quality fruit. Dry weather is again playing havoc throughout the territory and irrigation is being done where it is possible, but many growers are finding that they are getting less water from their wells and of course this slows down the operation. Scale insects are doing considerable damage and many growers have started with their oil sprays. It seems that we have a more difficult job each year in bringing scale insects

under control, and this is also true in the case of rust mite.

SOUTHWEST FLORIDA

Eaves Allison

This territory is still in need of a lot more rain. There have been good scattered showers, but some sections in the west coast section are suffering badly from the drought. Some citrus groves have been badly defoliated, and some have not bloomed at all even at this late date. It is significant that those groves which have had ample fertilizer and good cultural practices had an early normal bloom and are carrying a good crop of well sized fruit. Of course a very important factor is irrigation, but among the groves under my observation those not blooming are the ones that have had insufficient fertilizer. Successful citrus growers have learned one thing for sure and that is it's a good idea to shut their eyes to market conditions and give their trees ample fertilizer. Something always happens to make this an invariably profitable policy. Remember, when you plan your fertilizer program that you are not only feeding this year's crop but you are making next year's as well.

NORTH CENTRAL FLORIDA

V. E. (Val) Bourland

We had some very dry weather early in the summer, and we had ample rain to set a very nice crop of fruit, but at this writing, May 21st, we are getting dry in all sections of the territory and everyone with irrigation equipment have their plants going at full capacity. We are practically through with the movement of our fruit crop. There are a few valencia orange crops remaining on the trees, but they are hard to find and the next couple of weeks will bring the season to a close. We are now in the midst of our summer application of fertilizer and with good prices in prospect for the coming season, most growers are employing a full cultural program to go along with ample amounts of fertilizer and a well balanced spray program. Considerable pruning will be done this summer in getting water sprouts and dead wood removed from trees.

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This here new Citrus Bill just passed by the Florida legislature was said to be written to tighten up the stops over fresh and canned fruit . . . and as time goes on it will stir up more scraps than a bull dog with a chip on his shoulder . . . personally we have some Parson Brown oranges on sour lemon stock over on the Ridge and we was agin' the new restrictions . . . however, when we look back over the past two seasons and note that these oranges brought about twenty-five cents a box on the tree, and after talkin' to other growers who had Hamlins and other early varieties we've about decided that maybe the new law won't be too detrimental so fur as prices is concerned . . . we've said for a long time that we was shippin' fruit too early in the season so if this new legislation will keep our fruit on the trees until it's ripe enough for the consumer to eat and like, maybe some good will come of it . . . one thing is shore, early citrus prices can't be no worse'n they've been . . . the only way they can go is up.

It was jist about a hundred years ago that the first fertilizer plant was built in the United States and today the business of making fertilizer is one of the country's major industries . . . the growth of the fertilizer industry is reflected in direct proportion to the growth of our agriculture . . . today they is more'n 1100 fertilizer factories in this country which is supplyin' fifteen million tons of fertilizer to growers in this country every year . . . so from an infant industry which started usin' waste products from packin' houses and other industries the fertilizer industry has today come to be the one largest heavy chemical industries in the world . . . today the world is dependent on the fertilizer industry as never before, since the fertilizer used helps to grow the foods which feed the people of the entire world.

Peninsular Florida seems to be havin' more'n its share of dry weather and at the present time citrus groves throughout the whole citrus area is sufferin' from lack of moisture . . . groves that bloomed after the rains a few weeks ago is dry again and unless we get some rain soon a lot of the fruit will be lost . . . however, there'll possibly be another bloom when the rains come and if it acts like it did last year this late bloom will make quality fruit.

Durin' the war days a prominent Florida Vegetable grower-shipper attended a USDA outlook conference. After listening for several days to the comments of the agricultural experts our friend was heard to say: I'm not worried about OPA, WPB, WMC and those other alphabetic agencies — they will be gone soon after the war ends. What bothers me is these TRENDS they talk about all the time. Maybe we should get them abolished after the war, too.

A prominent grower of Polk County told us recently that his fruit had a higher packing house grade than any other shipped through this packing house. This grower has been using Lyons Fertilizers for more than twenty years.

Uncle Bill

Southern By-Products Dairy Feed Produces Milk Efficiently...

A concentrate dairy mixture, made up entirely of byproducts from southern crops, produced as much milk and cost less than a standard mixture containing 70 percent of grains, the U. S. Department of Agriculture reported recently, as a result of a Research and Marketing study in two southern States.

This research by the Bureau of Dairy Industry cooperating with the North Carolina Agricultural Experiment Station and State Department of Agriculture may result in wider use of southern byproducts and thus reduce the use of more expensive grains in dairy feed.

Two feeding experiments, one at the Dairy Field Experiment Station, Lewisburg, Tenn., and the other at the Coastal Plains Station, Willard, N. C., have been completed. In these experiments a concentrate byproducts mixture consisting of 375 pounds each of dried citrus pulp and dehydrated sweetpotatoes and 125 pounds each of peanut meal and cottonseed meal was compared with a standard grain mixture. The grain mixture was composed of 409 pounds of corn meal, 390 pounds of ground oats, 200 pounds of wheat bran, and 100 pounds of cottonseed meal.

Both concentrate mixtures were fed at the rate of 1 pound for each 3½ pounds of 4-percent milk produced at Lewisburg. At Willard both mixtures were fed at the rate of 1 to 3 at the start of the experiment, and reduced 2 percent every 10 days thereafter.

Good quality alfalfa hay was fed with both mixtures at Lewisburg. The daily amount of hay was limited to 1.6 pounds per 100

pounds of body weight, to insure full consumption of the concentrate mixtures. At Willard the roughage consisted of corn silage and alfalfa hay. The silage was fed daily at the rate of 3 pounds per 100 pounds of body weight; the alfalfa hay was limited to 1 pound daily per 100 pounds of body weight.

Combined results from the experiments show what the average production of the 18 Jersey cows when fed on the byproduct mixture was 22.8 percent of 4-percent milk per cow per day. They averaged 22.7 pounds when fed the grain mixture.

At the time of their purchase, the cost of the ingredients of the experimental mixture was \$75.04 per ton, or \$5.06 per 100 pounds of total digestible nutrients. The cost of the grain mixture was \$94.32 per ton, or \$6.45 per 100 pounds of T. D. N. On the nutrient basis, the grain mixture cost about 27 percent more than the experimental mixture.

Total feed cost, including roughage, per 100 pounds of 4-percent milk was \$2.72 for the experimental ration and \$3.15 for the grain ration at Willard; and it was \$3.05 for the experimental ration and \$3.40 for the grain ration at Lewisburg. Thus, there was a saving on the experimental ration of 43 cents per 100 pounds of milk at Willard and 35 cents per 100 pounds of milk at Lewisburg.

The results of these dairy feeding experiments emphasize the desirability of increasing the production of southern agricultural byproducts and also their use in concentrate mixtures for dairy cattle.

Dehydrated sweetpotatoes and dried citrus pulp are already being produced in considerable quantities in the South, and still larger quantities no doubt would be produced if their merits as feed for other livestock as well as dairy cattle were better known.

**NEW FROZEN CITRUS PUREES
MAKE FINE DESSERTS PRODUCTS**
(Continued from page 15)

F. the products prepared by the laboratory's process remained in excellent condition. No off-flavors

developed and losses of vitamin C were negligible. Commercial production began shortly thereafter and was immediately successful.

In the procedure developed at the laboratory, sound ripe fruit is first thoroughly washed (preferably with a detergent), rinsed in cold water, and dried. The stem end of the fruit is cut off and discolored spots are removed from the fruit so that no dark specks will appear in the brightly colored puree. After trimming, the whole fruit is cut up, crushed, and then screened to produce the puree. The final product contains less than 1 percent peel oil. It flows into a stainless steel tank, where sugar is added (1 part sugar to 5 parts puree), and is then filled into enamel-lined cans, sealed, and frozen.

MARKETING AGREEMENT MEMBERS ARE NOW BEING NOMINATED

By the time this publication reaches its readers, at least 32 growers and 24 shippers will have been nominated for places on the Growers Administrative Committee and the Shippers Advisory Committee. For the Growers Administrative Committee, meetings are being held on June 2 in the seven districts into which the state is divided, while for the Shippers Advisory Committee, the meeting for nomination is in Lakeland on June 3.


Classified Ads

CITRUS TREES — Standard Commercial Varieties and Rootstocks. Information, Recommendations and Prices Furnished Upon Request. Clay Hill Nurseries Co., Box 2880, Tampa, Florida.

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